



## Medicinal Importance of Sesame Roots, Seeds and Leaves (*Sesamum indicum* L.)

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Sesame (*Sesamum indicum* L.), commonly known as til, belongs to the family Pedaliaceae. It is one of the oldest oilseed crops and has been cultivated for thousands of years. In addition to its nutritional value, sesame has a long history of use in traditional Indian, Chinese, and other Asian medicinal practices. Different parts of the plant—including seeds, leaves, roots, fruits, and oil—have been used traditionally for various health conditions. Modern research has identified numerous phytochemicals in sesame, particularly lignans such as sesamin, sesamol, and sesamol.

### Medicinal Importance of Sesame Seeds

The seeds are the most extensively studied and economically important part of sesame. They contain oil, proteins, dietary fiber, minerals, vitamin E compounds, phytosterols, and bioactive lignans. Sesamin and sesamol are particularly important because of their antioxidant and other biological activities.

The major medicinal and health-related properties of sesame seeds include:

- **Antioxidant activity:** Sesame lignans, especially sesamin and sesamol, have antioxidant properties that may help protect cells from oxidative stress.
- **Cardiovascular health:** Research has investigated sesame and sesamin for effects on blood pressure, blood lipids, inflammation, and other cardiovascular risk factors.
- **Anti-inflammatory activity:** Experimental studies indicate that sesamin and sesamol can influence inflammatory pathways.
- **Lipid metabolism:** Sesame lignans have been studied for their potential effects on cholesterol and lipid metabolism.)
- **Nutritional value:** Sesame seeds provide protein, healthy fats, minerals, fiber, and other nutrients, making them valuable as part of a balanced diet. It is important to distinguish these potential health effects from proven medical treatments. Some findings come from laboratory or animal studies, and further human research is required for many medicinal claims.

### Medicinal Importance of Sesame Leaves

Sesame leaves are consumed as vegetables in some regions and contain a variety of phytochemicals. Research on the whole plant has identified phenolic compounds, flavonoids, phytosterols, vitamins, and other constituents in different plant organs.

Traditional medicinal literature reports the use of sesame leaves for several purposes, including preparations associated with **skin conditions, mouth inflammation, digestive complaints, and other ailments**. The 2021 comprehensive review of *S. indicum* documents traditional uses of leaves and other plant parts.

Potential importance of the leaves includes:

- **Antioxidant potential** due to phenolic and flavonoid compounds.
- **Traditional antimicrobial use** in certain herbal preparations.
- **Nutritional value** when young leaves are consumed as vegetables.

- **Traditional use for inflammatory and digestive complaints.**

However, compared with sesame seeds, **clinical research on the medicinal effects of sesame leaves is limited**. Therefore, traditional uses should not be presented as established treatments.

### Medicinal Importance of Sesame Roots

The **roots of sesame** have received considerably less scientific investigation than the seeds. Nevertheless, traditional medicine has used different parts of the plant, including roots, for various conditions. Traditional reports summarized in pharmacological reviews describe sesame roots in preparations associated with respiratory problems such as asthma and hair-related applications. Experimental studies of different sesame plant organs have reported biological activities including antioxidant, anti-inflammatory, antimicrobial, hepatoprotective, and other activities. However, these findings do not necessarily demonstrate that crude sesame root preparations are effective medicines in humans. Therefore, the medicinal importance of sesame roots can currently be described mainly in terms of traditional use and preliminary pharmacological research, rather than established clinical treatment.

### Important Phytochemicals in Sesame

Sesame contains more than 160 reported phytochemical constituents across its seeds, oil, and other plant organs. These include lignans, polyphenols, phytosterols, phenolic compounds, fatty acids, vitamins, proteins, and other compounds.

| Phytochemical      | Reported importance                                                                           |
|--------------------|-----------------------------------------------------------------------------------------------|
| Sesamin            | Antioxidant activity; studied for effects on lipid metabolism and cardiovascular risk factors |
| Sesamolin          | Antioxidant and anti-inflammatory potential                                                   |
| Sesamol            | Antioxidant activity                                                                          |
| Tocopherols        | Vitamin E compounds with antioxidant activity                                                 |
| Phytosterols       | Potential role in lipid metabolism                                                            |
| Phenolic compounds | Antioxidant and other biological activities                                                   |
| Fatty acids        | Important nutritional components of sesame oil                                                |

### Traditional Uses Versus Modern Evidence

Sesame has a particularly rich ethnomedicinal history. Traditional sources describe the use of sesame seeds, oil, leaves, roots, and other plant parts for conditions including inflammation, wounds, respiratory complaints, digestive problems, and other ailments. Modern pharmacological studies have reported antioxidant, anti-inflammatory, antimicrobial, antidiabetic, hepatoprotective, cardioprotective, and other activities in experimental models. However, the strength of evidence differs substantially among these effects, and some findings are based on cell or animal experiments rather than well-controlled human clinical trials.

### Conclusion

Sesame (*Sesamum indicum* L.) is an important medicinal and nutritional plant. Sesame seeds have the strongest scientific evidence and are rich in sesamin, sesamolin, sesamol, healthy fatty acids, protein, minerals, and other nutrients. Sesame leaves have nutritional and traditional medicinal importance, while sesame roots have mainly been documented in traditional medicine and preliminary pharmacological research. Overall, sesame shows considerable potential as a source of biologically active compounds. Nevertheless, more clinical research is necessary before extracts from roots, leaves, or seeds can be recommended as treatments for specific diseases.

### References

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